I claim:

1. An improved distillation apparatus for use with solar radiation; said apparatus comprising: an enclosed outer tube adapted for the flow of liquids, said outer tube having an inner surface and an outer surface and having a central axis running the length of said tube, said outer tube being of rigid construction and having a central plain running parallel to said central axis so as to bisect said outer tube into an upper section and a lower section; said lower section adapted to hold liquid in said outer tube; said upper section having an indented portion so as to form a "v" shaped section above said central axis of said outer tube, a trough portion in connection with the inner surface of said tube and running parallel to said central axis, said trough portion having a curved surface so as to collect liquids that condense on said upper section, said outer tube being of substantially air tight construction and having a means to reduce the pressure inside said outer tube; said trough portion having a midline bisecting the length of said trough and said midline being oriented at an angle with respect to horizontal so as to urge the flow of liquid in one direction; wherein said upper section is composed of a material that is photochromic in nature so as to get darker in color in response to changes in the intensity of the solar radiation.

2. An improved distillation apparatus for use with solar radiation; said apparatus comprising: an enclosed outer tube adapted for the flow of liquids, said outer tube having an inner surface and an outer surface and having a central axis running the length of said tube, said outer tube being of rigid construction and having a central plain running parallel to said central axis so as to bisect said outer tube into an upper section and a lower section; said lower section adapted to hold liquid in said outer tube; said outer tube being of substantially air tight construction and having a

means to reduce the pressure inside said outer tube; said outer tube having pair of trough portions running parallel to said central axis and each in connection with said inner surface of said outer tube, said trough portions located on opposite sides of said outer tube and of curved surface so as to collect liquids that condense on said upper section, said upper section having at least two indented portions and each of said indented portions disposed so that at least one said indented portion is above at least one of said trough portions, each of said trough portions having a midline bisecting the length of said troughs and said midlines being oriented at an angle with respect to horizontal so as to urge the flow of liquid in said troughs in one direction; wherein said upper section is composed of a material that is photochromic in nature so as to get darker in color in response to changes in the intensity of the solar radiation.